

Arguments to be Considered by Pre-Appeal Brief Conference PanelA. Rejection of Claims 1 and 3-14

Claims 1 and 3-14 have been rejected under 35 USC §103 as being unpatentable over Scalora, (U.S. 6,262,830), in view of Knapp et al., (U.S. 6,077,569). This rejection under 35 U.S.C. §103 is respectfully traversed.

Scalora '830 does not teach or suggest a plurality of high index layers comprising *high index degenerately doped materials* and a plurality of low index layers comprising *high thermal and electrically conductive materials*. Scalora '830 describes using alternating layers of Ag/MgF<sub>2</sub>. There is no discussion that the high index layers comprise high index degenerately doped materials and the low index layers comprise high thermal and electrical conductivity materials. One of ordinary would not associate air and glass as being high index degenerately doped materials and high thermal and electrical conductivity materials.

Moreover, Scalora '830 does not teach or suggest forming *a mirror* structure having alternating layers of the plurality of high index layers and the plurality of low index layers having a relationship

$$E_{g,l} > E_{g,h} > hc/\lambda$$

so that *electricity and heat* is conducted through the optical device. Applicants do not accept the Examiner's allegation that this relationship is inherent since Scalora '830 does not even address the issue of *high index layers* comprising *degenerately doped materials*, and *low index layers* comprising *high thermal and electrically conductive materials*. Moreover, the Examiner has provided no clear indication of such a position that one of ordinary skill can support such a conclusion of inherency. Applicants contend that this is an allegation without support for its conclusion.

The Examiner makes reference that Scalora '830 uses materials that are conductive, such as metals. Metals can conduct electricity, but there is no mention in Scalora '830 whether their metals can also be *thermally conductive*. Scalora '830 describes using thin and thick metal layers with the combination of a dielectric or semiconductor. There is no mention

whether any of the material combinations used in Scalora '830 have *high index layers* comprising *degenerately doped materials*, such as doped Si.

Knapp et al. '569 describes a dielectric coating comprising a multilayered coating structure that is composed of alternating layers of dielectric material(s) with relatively high refractive index, and dielectric material(s) with relatively lower refractive index deposited onto the convex and concave sides of a lens. Claim 1 of the present application recites specifically *high index layers* comprising *degenerately doped materials*. One of ordinary skill in the art will not associate *high index layers* comprising *degenerately doped materials*, such as doped Si, with a high index dielectric material. These elements are simply not synonymous.

Accordingly, the combination of Scalora '830 and Knapp et al. '569 do not support a *prima facie* case of obviousness under the provisions of 35 USC §103 against claim 1.

With respect to dependent claims 3-14, the Applicants, for the sake of brevity, will not address the reasons supporting patentability for this individual dependent claim, as these claims depend directly from the allowable independent claim 1 for the reasons set forth above. The Applicants reserve the right to address the patentability of these dependent claims at a later time, should it be necessary.

In view of all the reasons set forth above, the Pre-Appeal Brief Conference Panel is respectfully requested to reconsider and instruct the Examiner to withdraw the present rejection under 35 U.S.C. §103.

#### **B. Rejection of Claims 1 and 29**

Claims 1 and 29 have been rejected under 35 USC §103 as being unpatentable over Scalora (US 6,343,167) in view of Knapp et al. (US 6,077,569), and further in view of Duck et al., (US 5,615,289). This rejection under 35 U.S.C. §103 is respectfully traversed.

Scalora '167 describes a device interposing a periodicity defect region into a uniform photonic band gap (PBG) structure, and describes using high and low index layers but Scalora '167 does not teach or suggest use of *high index layers* comprising *degenerately doped materials* and *low index layers* comprising *high thermal and electrically conductive materials*, as recited in claims 1 and 29. Knapp et al. '569 also does not teach or suggest such *high index layers* comprising *degenerately doped materials*. It will be appreciated that Duck et al. '289

does not remedy the deficiencies as argued regarding Scalora '167 and Knapp et al. '569. Duck et al. '289 describes a filter device comprising Fabry-Perot cavity structures having high and low index layers, but there is no discussion as to these Fabry-Perot devices having *high index layers* comprising *degenerately doped materials*, and *low index layers* comprising *high thermal and electrically conductive materials*, as recited in claims 1 and 29.

Moreover, the Examiner alleges in the rejection that the relationship

$$E_{g,l} > E_{g,h} > hc/\lambda$$

is inherent. Applicants do not agree with the Examiner's allegation that this relationship is inherent since *neither* of the cited reference even addresses the issue of a *high index layer* comprising *degenerately doped materials*, and *low index layers* comprising *high thermal and electrically conductive materials* use in the conduction of heat and electricity.

Therefore, the combination of Scalora '167, Knapp et al. '569, and Duck et al. '289 does not render claims 1 and 29 obvious under the provisions of 35 USC §103.

Accordingly, in view of all the reasons set forth above, the Pre-Appeal Brief Conference Panel is respectfully requested to reconsider and instruct the Examiner to withdraw the present rejection under 35 U.S.C. §103.

**CONCLUSION**

In view of all the reasons set forth above, the Pre-Appeal Brief Conference Panel is respectfully requested to reconsider and instruct the Examiner to withdraw the present rejections, and to allow pending claims 1, 3-14 and 29.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Matthew E. Connors", written over a horizontal line.

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